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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/089,698	06/03/98	SPITZ	D LE9-97-123

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EXAMINER

BROOKE, M

ART UNIT PAPER NUMBER

2853

DATE MAILED: 04/10/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/089,698

Applicant(s)

SPITZ ET AL.

Examiner

Michael S. Brooke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 25-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 25-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Appeal Brief*

1. The finality of the rejection of the last Office action dated 10/12/00 is withdrawn, and new grounds of rejection have been entered.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 5 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659).

Oda et al. teaches (Fig. 1) an ink jet cartridge comprising a substrate holder (17) for mounting one of more head tips, having nozzles and heaters (col. 8:32-35). It is the Examiner's position that the head tip is a semi-conductor substrate. If the Applicant contests this position, the Examiner takes Official Notice that it is well known in the ink jet art to provide heaters on a semiconductor substrate. The substrate holder has a top surface containing one or more locator wells for accommodating the semi-conductor substrates. Each well has a well base and a plurality of walls. The well base has at least one ink feed slot formed therein. The holder includes one or more chambers (14)

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on an opposing side of the substrate holder from the locator wells and is in fluid communication with a corresponding locator well. The holder also has side walls formed along a perimeter thereof. An ink reservoir body (11) is attached to the holder. While Oda et al. is silent as to the composition of the heat sink, the Examiner takes Official Notice that it is well known to form a heat sink out of metal.

Oda et al. teaches the claimed invention with the exception of the side walls having fins, a coating of silicon dioxide, and the silicon dioxide having a thickness of between 0.1 to 2.5 microns and the ink reservoir body being integral with the substrate holder.

It is well known in the ink jet art to use a layer of silicon dioxide ink an ink jet print head for the purpose of providing a protective layer. Furthermore, no criticality has been disclosed for the claimed thickness range. Therefore, it would have been obvious to one of ordinary skill in the art to provide a silicon dioxide layer having a thickness of between 0.1 to 2.5 microns for the purpose of providing a protective layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided an ink reservoir integral with the holder, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art (*Howard v. Detroit Stove Works*, 150 U.S. 164 (1893)).

Watanabe teaches a temperature controller for a semi-conductor device. As can be seen in Fig. 1, the heat sink is provided with integrally formed fins (6A, 6B) for the purpose of increasing the surface area of the heat sink, thereby increasing the rate at

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which heat is dissipated. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al. a heat sink having integrally formed fins for the purpose of increasing the surface area of the heat sink, thereby increasing the rate at which heat is dissipated as taught to be old by Watanabe.

4. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), as applied to claims 1, 4, 5 and 10-12 above, and further in view of Fukuda et al. (5,066,964).

Oda et al., as modified, teaches the claimed invention with the exception of the substrate holder being made of aluminum.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the heat sink of Oda et al. from aluminum for the purpose of dissipating heat as taught by Fukuda et al.

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), as applied to claims 1, 4, 5 and 10-12 above, and further in view of Wenzel et al. (5,426,458).

Oda et al., as modified, teaches the claimed invention with the exception of a polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. It would have been obvious to one of ordinary skill in the art at the time

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the invention was made to have provided in Oda et al., as modified, a polyxylylene layer having a thickness of between 0.1 to 10 microns for the purpose of providing corrosion resistance.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), as applied to claims 1, 4, 5 and 10-12 above, and further in view of Drake et al. (5,079,189).

Oda et al. as modified, discloses the claimed invention with the exception of the substrate holder comprising a material containing carbon fibers or graphite.

Drake et al. discloses a semi-conductor substrate having a heat sink (12.1) made of graphite for the purpose of cooling the substrate (col., 5, lines 16-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a substrate holder comprising graphite for the purpose of cooling the substrate as taught by Drake et al.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), as applied to claims 1, 4, 5 and 10-12 above, and further in view of Cook (5,834,689).

Oda et al., as modified, discloses the claimed invention with the exception of the substrate holder comprising a metal-ceramic composite.

Cook discloses a heat sink comprising a composite of a metal matrix and a ceramic for the purpose of improving the thermal conductivity of the heat sink so as to reduce its size.

It would have been recognized in the art of Oda et al. that reducing the size of a heat sink would be desirable so as to reduce the overall size of the print head.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a substrate holder comprising a metal-ceramic composite for the purpose improving the thermal conductivity of the substrate holder, so as to reduce the size of the print head.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), as applied to claims 1, 4, 5 and 10-12 above, and further in view of Ta et al. (4,755,836).

Oda et al., as modified, teaches the claimed invention with the exception of one or more carriage positioning devices adjacent one of the side walls.

Ta et al. teaches an ink jet cartridge (Fig. 10) having a plurality of lands (78, 78a, 80, 80a, 82 and 82a) which are positioned adjacent to the side walls of the cartridge for the purpose of aligning the cartridge in the carriage.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, carriage positioning devices for the purpose of aligning the cartridge in the carriage as taught by Ta et al.

9. Claims 14, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (4,942,408) in view of Watanabe (4,689,659) and Ta et al. (4,755,836).

Oda et al. teaches (Fig. 1) an ink jet cartridge comprising a substrate carrier (17) for mounting one of more head tips, having nozzles and heaters (col. 8:32-35). It is the Examiner's position that the head tip is a semi-conductor substrate. If the Applicant

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contests this position, the Examiner takes Official Notice that it is well known in the ink jet art to provide heaters on a semiconductor substrate. The substrate carrier has a top surface containing one or more locator wells for accommodating the semi-conductor substrates. Each well has a well base and a plurality of walls. The well base has at least one ink feed slot formed therein. The carrier includes one or more chambers (14) on an opposing side of the substrate carrier from the locator wells and is in fluid communication with a corresponding locator well. The carrier also has side walls formed along a perimeter thereof. An ink reservoir body (11) is attached to the carrier. While Oda et al. is silent as to the composition of the heat sink, the Examiner takes Official Notice that it is well known to form a heat sink out of metal.

Oda et al. teaches the claimed invention with the exception of the side walls having fins, at least two alignment devices adjacent one of the side walls, a coating of silicon dioxide, the silicon dioxide having a thickness of between 0.1 to 2.5 microns and the ink reservoir body being integral with the substrate holder.

It is well known in the ink jet art to use a layer of silicon dioxide ink an ink jet print head for the purpose of providing a protective layer. Furthermore, no criticality has been disclosed for the claimed thickness range. Therefore, it would have been obvious to one of ordinary skill in the art to provide a silicon dioxide layer having a thickness of between 0.1 to 2.5 microns for the purpose of providing a protective layer.

Watanabe teaches a temperature controller for a semi-conductor device. As can be seen in Fig. 1, the heat sink is provided with integrally formed fins (6A, 6B) for the purpose of increasing the surface area of the heat sink, thereby increasing the rate at



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which heat is dissipated. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al. a heat sink having integrally formed fins for the purpose of increasing the surface area of the heat sink, thereby increasing the rate at which heat is dissipated as taught to be old by Watanabe.

Ta et al. teaches an ink jet cartridge (Fig. 10) having a plurality of lands (78, 78a, 80, 80a, 82 and 82a) which are positioned adjacent to the side walls of the cartridge for the purpose of aligning the cartridge in the carriage.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, carriage positioning devices for the purpose of aligning the cartridge in the carriage as taught by Ta et al.

10. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659) and Ta et al. (4,755,836), as applied to claims 14, 17 and 18, and further in view of Fukuda et al. (5,066,964).

Oda et al., as modified, teaches the claimed invention with the exception of the substrate holder being made of aluminum.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the heat sink of Oda et al., from aluminum for the purpose of dissipating heat as taught by Fukuda et al.

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11. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659) and Ta et al. (4,755,836), as applied to claims 14, 17 and 18, and further in view of Wenzel et al. (5,426,458).

Oda et al., as modified, teaches the claimed invention with the exception of a polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a polyxylylene layer having a thickness of between 0.1 to 10 microns for the purpose of providing corrosion resistance.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659) and Ta et al. (4,755,836), as applied to claims 14, 17 and 18, and further in view of and further in view of Drake et al. (5,079,189).

Oda et al. as modified, discloses the claimed invention with the exception of the substrate holder comprising a material containing carbon fibers or graphite.

Drake et al. discloses a semi-conductor substrate having a heat sink (12.1) made of graphite for the purpose of cooling the substrate (col., 5, lines 16-18).

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a substrate holder comprising graphite for the purpose of cooling the substrate as taught by Drake et al.

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13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), Ta et al. (4,755,836) and , as applied to claims 14, 17 and 18, and further in view of and further in view of Cook (5,834,689).

Oda et al., as modified, discloses the claimed invention with the exception of the substrate holder comprising a metal-ceramic composite.

Cook discloses a heat sink comprising a composite of a metal matrix and a ceramic for the purpose of improving the thermal conductivity of the heat sink so as to reduce its size.

It would have been recognized in the art of Oda et al. that reducing the size of a heat sink would be desirable so as to reduce the overall size of the print head.

Therefore, it have been obvious to one having ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a substrate holder comprising a metal-ceramic composite for the purpose improving the thermal conductivity of the substrate holder, so as to reduce the size of the print head.

The steps of the method of claims 14-22 are deemed to be rendered obvious in view of the functions of the structure in the combination discussed above.

14. Claims 25-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (4,942,408) in view of Ta et al. (4,755,836), Fukuda et al. (5,066,964) and Wong (5,084,713).

Oda et al. teaches (Fig. 1) an ink jet cartridge comprising a substrate carrier (17) for mounting one of more head tips, having nozzles and heaters (col. 8:32-35). It is the Examiner's position that the head tip is a semi-conductor substrate. If the Applicant

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contests this position, the Examiner takes Official Notice that it is well known in the ink jet art to provide heaters on a semiconductor substrate. The substrate carrier has a top surface containing one or more locator wells for accommodating the semi-conductor substrates. Each well has a well base and a plurality of walls. The well base has at least one ink feed slot formed therein. The carrier includes one or more chambers (14) on an opposing side of the substrate carrier from the locator wells and is in fluid communication with a corresponding locator well. The carrier also has side walls formed along a perimeter thereof. An ink reservoir body (11) is attached to the carrier. While Oda et al. is silent as to the composition of the heat sink, the Examiner takes Official Notice that it is well known to form a heat sink out of metal.

Oda et al. teaches the claimed invention with the exception of the side walls having fins, with the exception of at least two alignment devices and a plurality of slots for attaching the nose piece to the reservoir, a coating of silicon dioxide, the silicon dioxide having a thickness of between 0.1 to 2.5 microns and the ink reservoir body being integral with the substrate holder and the metal being aluminum.

It is well known in the ink jet art to use a layer of silicon dioxide ink an ink jet print head for the purpose of providing a protective layer. Furthermore, no criticality has been disclosed for the claimed thickness range. Therefore, it would have been obvious to one of ordinary skill in the art to provide a silicon dioxide layer having a thickness of between 0.1 to 2.5 microns for the purpose of providing a protective layer.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-

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18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the heat sink of Oda et al., from aluminum for the purpose of dissipating heat as taught by Fukuda et al.

Wong discloses an ink jet print head comprising a substrate support panel (50) having a recess (48) for accommodating and cooling a semi-conductor substrate (12). As can be seen in Fig. 8, the support panel has a top surface and side walls which define a cylindrical first opening (100) which is located opposite the top surface. Plastic alignment pins are provided adjacent the side walls for attaching the panel to holes in a plastic ink cartridge (10) which is positioned adjacent to the support panel. In addition, alignment pins (98) are provided for the purpose of aligning the head to a carriage. It would have been obvious to one of ordinary skill in the art to provide the cylindrical first openings (100) around the perimeters of the side walls and the plastic alignment pins on the support panel, since it has been held that rearranging the parts of an invention involves only routine skill in the art. This would suggest to one of ordinary skill in the art to provide in Oda et al., as modified, slots along the perimeter of the side walls for the purpose of attaching the fluid block to the ink reservoir. Furthermore, it would have been obvious to one of ordinary skill in the art to make the carrier removable from the ink reservoir to allow replacement of the ink reservoir with necessitating the replacement of the carrier.

15. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (4,942,408) in view of Ta et al. (4,755,836), Fukuda et al. (5,066,964)

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and Wong (5,084,713), as applied to claims 25-28 and 31 above, and further in view of Wenzel et al. (5,426,458).

Oda et al., as modified, teaches the claimed invention with the exception of a polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a polyxylylene layer having a thickness of between 0.1 to 10 microns for the purpose of providing corrosion resistance.

16. Claims 32, 34, 35 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659)

Oda et al. teaches (Fig. 1) an ink jet cartridge comprising a substrate carrier (17) for mounting one of more head tips, having nozzles and heaters (col. 8:32-35). It is the Examiner's position that the head tip is a semi-conductor substrate. If the Applicant contests this position, the Examiner takes Official Notice that it is well known in the ink jet art to provide heaters on a semiconductor substrate. The substrate carrier has a top surface containing one or more locator wells for accommodating the semi-conductor substrates. Each well has a well base and a plurality of walls. The well base has at least one ink feed slot formed therein. The carrier includes one or more chambers (14) on an opposing side of the substrate carrier from the locator wells and is in fluid communication with a corresponding locator well. The carrier also has side walls

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formed along a perimeter thereof. An ink reservoir body (11) is attached to the carrier. While Oda et al. is silent as to the composition of the heat sink, the Examiner takes Official Notice that it is well known to form a heat sink out of metal. Oda et al. further teaches at least one of sides of the substrate carrier having a substantially planar surface extending from the substrate surface

Oda et al. teaches the claimed invention with the exception of at least two of the four side containing cooling fins, a coating of silicon dioxide, and the silicon dioxide having a thickness of between 0.1 to 2.5 microns.

It is well known in the ink jet art to use a layer of silicon dioxide ink an ink jet print head for the purpose of providing a protective layer. Furthermore, no criticality has been disclosed for the claimed thickness range. Therefore, it would have been obvious to one of ordinary skill in the art to provide a silicon dioxide layer having a thickness of between 0.1 to 2.5 microns for the purpose of providing a protective layer.

Watanabe teaches a temperature controller for a semi-conductor device. As can be seen in Fig. 1, the heat sink is provided with integrally formed fins (6A, 6B) for the purpose of increasing the surface area of the heat sink, thereby increasing the rate at which heat is dissipated. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al. a heat sink having integrally formed fins for the purpose of increasing the surface area of the heat sink, thereby increasing the rate at which heat is dissipated as taught to be old by Watanabe.

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17. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), as applied to claims 32, 34, 35 and 38 above, and further in view of Fukuda et al. (5,066,964).

Oda et al., as modified, teaches the claimed invention with the exception of the substrate holder being made of aluminum.

Fukuda et al. discloses an ink jet print head comprising a heat sink (1) made of aluminum for the purpose of cooling a heat generating substrate (10) (col. 6, lines 10-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the heat sink of Oda et al. from aluminum for the purpose of dissipating heat as taught by Fukuda et al.

18. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), as applied to claims 32, 34, 35 and 38 above, and further in view of Wenzel et al. (5,426,458).

Oda et al., as modified, teaches the claimed invention with the exception of a polyxylylene coating having a thickness of about 0.1 to 10 microns.

Wenzel et al. discloses an ink jet print head having a coating of polyxylylene with a thickness of between 0.5 and 5 microns for the purpose of forming a corrosion resistant layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Oda et al., as modified, a polyxylylene layer having a thickness of between 0.1 to 10 microns for the purpose of providing corrosion resistance.



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19. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oda et al. (5,552,816) in view of Watanabe (4,689,659), as applied to claims 32, 34, 35 and 38 above, and further in view of Wong et al. (5,084,713).

Oda et al., as modified, teaches the claimed invention with the exception of the at least one side comprising one or more notches for removably attaching an ink reservoir to the carrier.

Wong discloses an ink jet print head comprising a substrate support panel (50) having a recess (48) for accommodating and cooling a semi-conductor substrate (12). As can be seen in Fig. 8, the support panel has a top surface and side walls which define a cylindrical first opening (100) which is located opposite the top surface. Plastic alignment pins are provided adjacent the side walls for attaching the panel to holes in a plastic ink cartridge (10) which is positioned adjacent to the support panel. In addition, alignment pins (98) are provided for the purpose of aligning the head to a carriage. It would have been obvious to one of ordinary skill in the art to provide the cylindrical first openings (100) around the perimeters of the side walls and the plastic alignment pins on the support panel, since it has been held that rearranging the parts of an invention involves only routine skill in the art. This would suggest to one of ordinary skill in the art to provide in Oda et al., as modified, slots along the perimeter of the side walls for the purpose of attaching the fluid block to the ink reservoir. Furthermore, it would have been obvious to one of ordinary skill in the art to make the carrier removable from the ink reservoir to allow replacement of the ink reservoir with necessitating the replacement of the carrier.

***Response to Arguments***

20. Applicant's arguments filed 01/03/01 regarding the combination of Braun with the other references is deemed to be moot in view of the new grounds of rejection.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is 703-305-0262. The examiner can normally be reached on 6:30-300 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*MSB*

Michael S. Brooke  
April 5, 2001

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800